Academic Program Review

ACADEMIC YEAR	2012-2013	☐ Basic Skills ☒ Transfer ☐ Career Technical Education (CTE)
PROGRAM	Life Science	
DEPARTMENT	Science, Math, and Engineering	
DIVISION	Health and Sciences	
SUBMITTER	Daniel Gilison	

I. INSTITUTIONAL GOALS

INSTITUTIONAL GOAL **1**	**INSTITUTIONAL MISSION AND EFFECTIVENESS** – The College will maintain programs and services that focus on the mission of the College supported by data-driven assessments to measure student learning and student success.
INSTITUTIONAL GOAL **2**	**STUDENT LEARNING PROGRAMS AND SERVICES** – The College will maintain instructional programs and services which support student success and the attainment of student educational goals.
INSTITUTIONAL GOAL **3**	**RESOURCES** – The College will develop and manage human, technological, physical, and financial resources to effectively support the College mission and the campus learning environment.
INSTITUTIONAL GOAL **4**	**LEADERSHIP AND GOVERNANCE** – The Board of Trustees and the Superintendent/President will establish policies that assure the quality, integrity, and effectiveness of student learning programs and services, and the financial stability of the institution.

II. PROGRAM GOALS

A. PAST – EVALUATION OF PREVIOUS CYCLE OBJECTIVES/PROGRAM GOALS (SET IN PREVIOUS YEAR)

List your previous objectives/goals and associated Institutional Goals. All program goals must address at least one of the institutional goals.

PAST PROGRAM GOALS (Describe past program goals.)	INSTITUTIONAL GOAL(S) (Check all that apply.)

1	**PAST PROGRAM GOAL #1**	**INSTITUTIONAL GOAL(S)**
	Identify Program Goal from Last Program Review: Offer 2 sections of BIOL 202, Anatomy/Physiology II so that all students who have successfully completed BIOL 200 can enroll in BIOL 202 in a timely manner (i.e., in the semester immediately following completion of BIOL200) This holds true for BIOL 206, Human Physiology, as well. This will be accomplished by the hiring of additional qualified faculty.	☐ 1 ☒ 2 ☒ 3 ☐ 4
	☐ Met ☐ Partially Met ☒ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** This is based on budget and prioritization for new faculty hires. We expect to continue to request a new faculty for this position.	
2	**PAST PROGRAM GOAL #2**	**INSTITUTIONAL GOAL(S)**
	Identify Program Goal from Last Program Review: Offer more sections of BIOL 220 to meet student demand. This will be accomplished by the hiring of additional qualified faculty.	☐ 1 ☒ 2 ☒ 3 ☐ 4
	☒ Met ☐ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** We have moved from offering 2 sections of BIOL 220 each semester to 3-4 sections each semester, in addition to offerings of BIOL 220 in summer and winter (in the future) sessions. This has been due to, in part, by the hiring of a new Chemistry instructor, which allowed the Biology/Chemistry instructor to teach an additional section of BIOL 220 without decreasing sections of CHEM 100.	

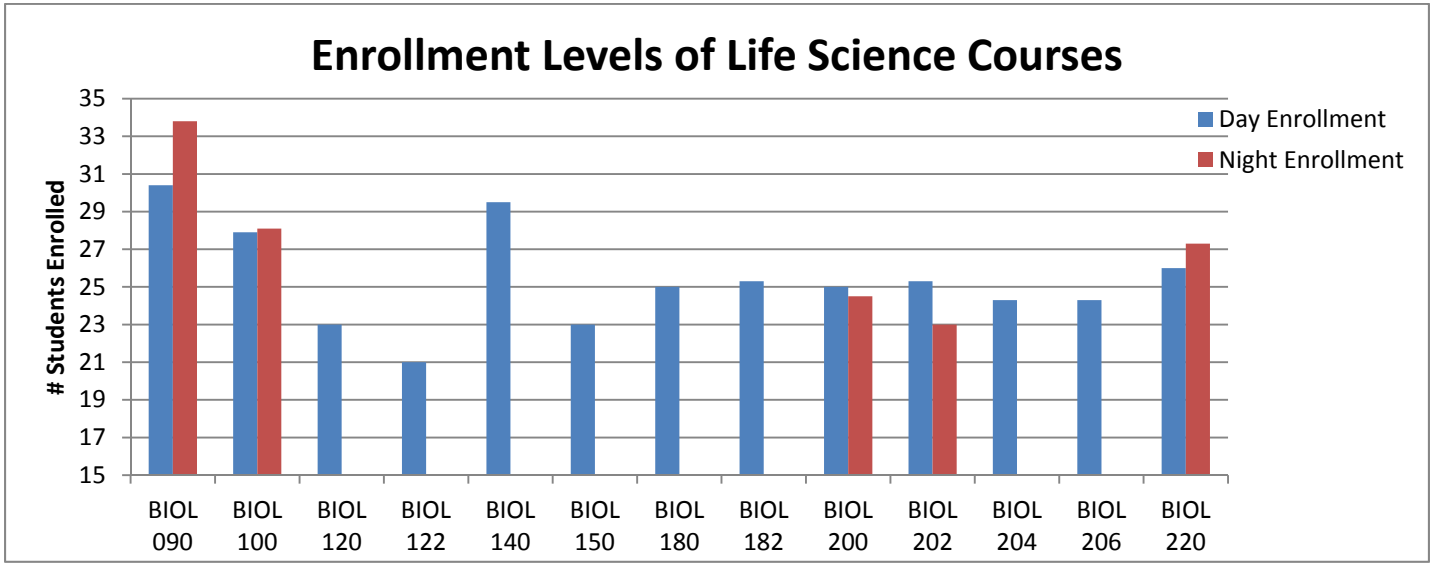
3	PAST PROGRAM GOAL #3	INSTITUTIONAL GOAL(S)
	Identify Program Goal from Last Program Review: Offer more sections of BIOL 100 to meet demand for this class. This will be accomplished by the hiring of additional qualified faculty.	☐ 1 ☒ 2 ☒ 3 ☐ 4
	☐ Met ☒ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** While we have added some additional sections of BIOL 100 by hiring a part-time faculty member, we still have need of a full-time faculty member to offer additional sections.	

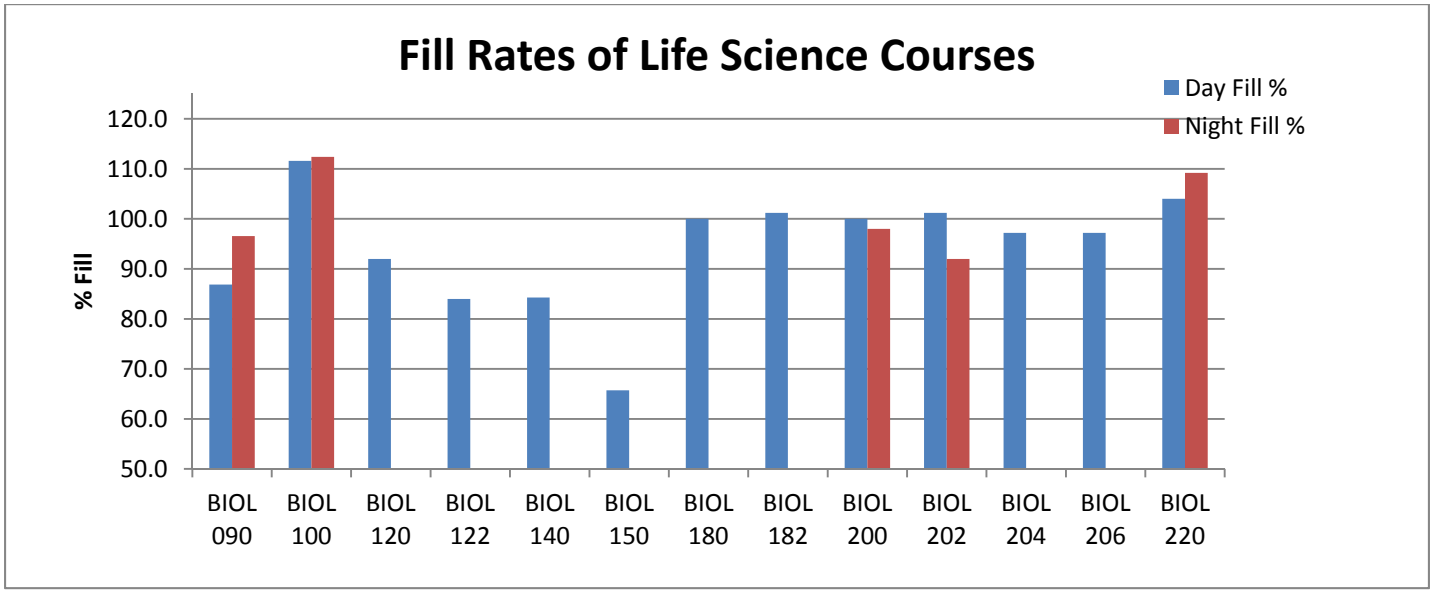
Comments:

B. PRESENT – DATA ANALYSIS AND PROGRAM HEALTH

1. Summarize and analyze all disaggregated data by day, evening, gender, ethnicity, and distance education regarding enrollments, fill rates, productivity, completion, success, retention, persistence, and transfer (complete a, b, & c). ***Attach graphs or trend data***.

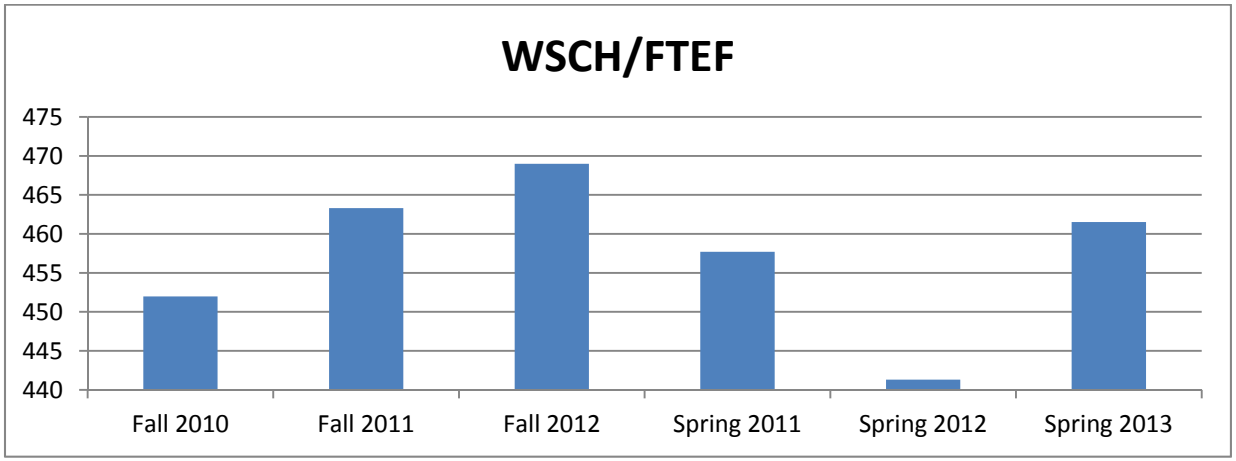
    a. Discuss and chart the trends in enrollment and fill rate for each program by day and evening at the program level.


Enrollment Levels of Life Science Courses
Students Enrolled
35
33
31
29
27
25
23
21
19
17
15
Day Enrollment
Night Enrollment
BIOL 090
BIOL 100
BIOL 120
BIOL 122
BIOL 140
BIOL 150
BIOL 180
BIOL 182
BIOL 200
BIOL 202
BIOL 204
BIOL 206
BIOL 220


Fill Rates of Life Science Courses
% Fill
120.0
110.0
100.0
90.0
80.0
70.0
60.0
50.0
Day Fill %
Night Fill %
BIOL 090
BIOL 100
BIOL 120
BIOL 122
BIOL 140
BIOL 150
BIOL 180
BIOL 182
BIOL 200
BIOL 202
BIOL 204
BIOL 206
BIOL 220

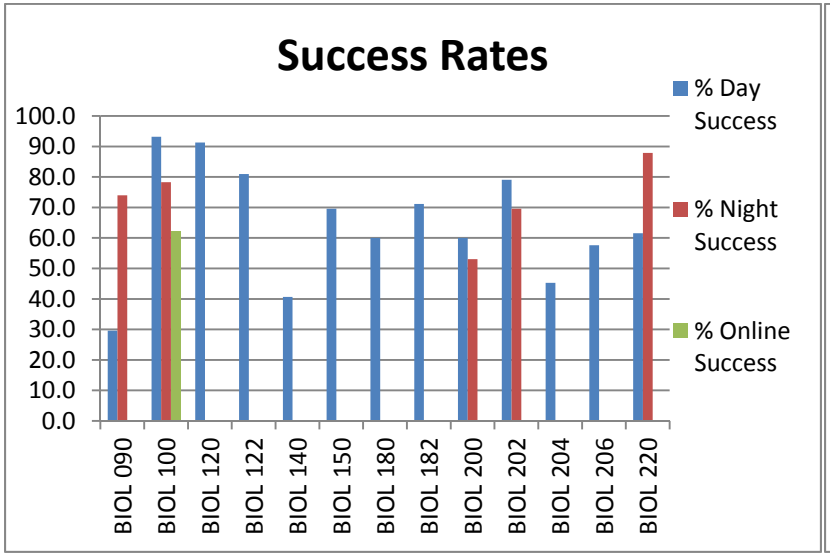
The trends show that enrollment and fill rates are similarly high for both day and evening sections of all Biology courses.

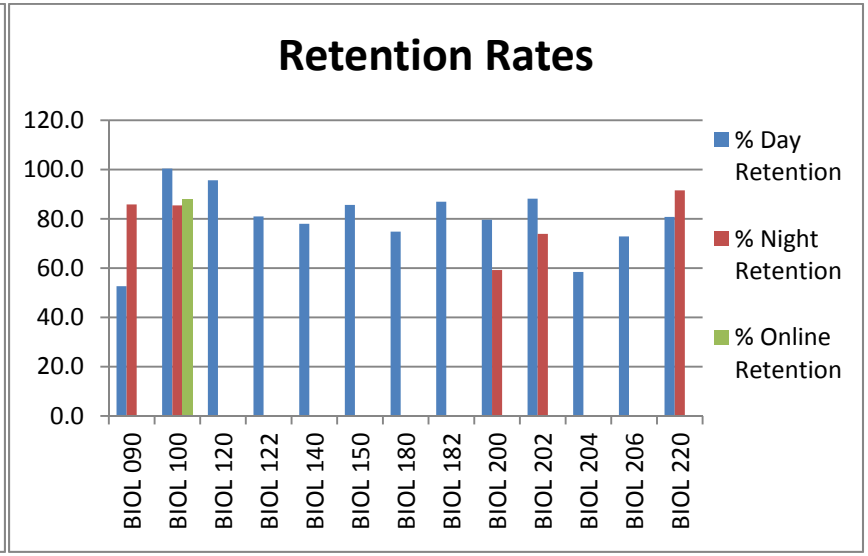
b. What are the trends in productivity? (WSCH/FTEF) The goal is 525 as per state guidelines. A low number means that we are below target levels for productivity. For example, in a small class that has a mandated cap of 15 students, the fill rate may be 100% but the productivity number (WSCH/FTEF) will be very low. A class with a cap of 40 students with a 100% fill rate will have a productivity number close to or above 525.



For Biology courses, the WSCH/FTEF averages around 457, which is below the state guideline of 525. This is mainly due to science lab classes having an enrollment of 25 students.

c. Discuss and chart the success and retention rates by day, evening (extended day), and online classes in each program and identify gaps.

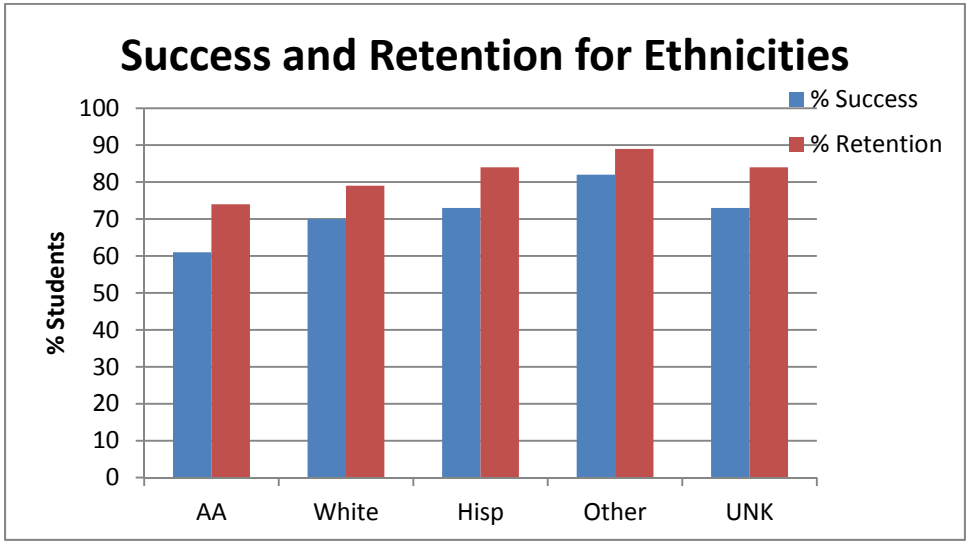




Success rates for day vs. night courses do not show many differences, except for BIOL 090 and BIOL 220, where students are more successful at night than during the day. One possible reason is that perhaps night students who want to get into LVN and RN programs are more dedicated and willing to do the work needed for the courses. Most courses have a high success rate of 70% or more, with the 200-level and BIOL 090 classes being the exception.

Retention rates seem to be high, with most courses having around an 80% retention rate. With only 5 courses offered at night, it is difficult to make any sort of trend analysis, as some courses have better retention at night and others during the day.

d. Discuss and chart the success and retention rates in each program and identify gaps for five ethnic groups. (African-American, White, all Hispanics, Other, Unknown).



Retention rates range between 70-90%, while success rates range between 60-80%, with African-Americans being the lowest success and retention group. It is difficult to say why, especially considering that there were only 23 African-American students (small sample size) compared to the other groups which had 200 to 2000 students per group.

e. Discuss the trends in the number of degrees or certificates awarded, if applicable. (You may be able to expand more about this in B.3 below.)

5 degrees have been awarded in the Life Science major in the past 3 years. There is no certificate for this major.

f. What program changes, if any, will you recommend that you expect would have a positive effect on your students in your program, if applicable?

Some courses, such as BIOL 204 and BIOL 206, may need to offer night sections to support the evening student population that needs these courses. Class sizes were increased from 25 to 28 for most science courses, which would increase WSCH. Because success in BIOL 090 and BIOL 220 appear to be better in the evening sections, perhaps we should offer a greater percentage of these courses in the evening.

2. Summarize revisions, additions, deletions, or alternate delivery methods to courses and/or program based on the last program review.

   BIOL 100 was offered online for several years, but is not any more due to low success and retention rates, and due to high levels of academic dishonesty on online exams. The use of the lecture hall (2734) for lecture-only and lab courses has helped with room scheduling, but most instructors have either found difficulty with teaching in the room, or simply do not prefer to teach there.

3. Evaluate the program's viability by addressing program completion, size (FTES), projections (growing/stable/declining), and quality of outcomes. For CTE programs, also include labor market projections, placement, and performance on external testing/exams (i.e. ASE, NABCEP) and industry-recognized credentials, placement, and performance on external testing or exams (NCLEX, ASC, NAP).

   Overall, the program is successful, even though there have only been 5 degrees awarded in the past 3 years. The main reason is that most of the courses offered are taken by students who are Nursing majors (BIOL 100, 200, 202, 204, 206, and 220), or are used for general education (BIOL 100). FTES has been on a steady increase in the past 3 years, increasing from 121.8 FTES in Fall 2010 to 131.7 in Spring 2013.

C. FUTURE – LIST OF "SMART" (SPECIFIC MEASURABLE ATTAINABLE RELEVANT TIME-LIMITED) PROGRAM OBJECTIVES FOR NEXT ACADEMIC YEAR TO ADDRESS PROGRAM IMPROVEMENT, GROWTH, OR UNMET NEEDS/GOALS. ALL PROGRAM GOALS MUST ADDRESS AT LEAST ONE OF THE INSTITUTIONAL GOALS.

FUTURE PROGRAM GOALS (Describe future program goals. List in order of budget priority.)	INSTITUTIONAL GOAL(S) (Check all that apply.)

1	FUTURE PROGRAM GOAL #1 Budget Priority #1	INSTITUTIONAL GOAL(S)
Identify Goal: Increase number of anatomy and physiology course sections.		☐ 1 ☒ 2 ☒ 3 ☐ 4
Objective: Increase BIOL 200 and BIOL 204 sections to 6 per year, and increase BIOL 202 and BIOL 206 sections to 3 per year.		
Task(s): Hire a new Biology faculty member to teach these additional courses.		
Timeline: Hope to hire faculty by 2015-2016 academic year.		

EXPENSE TYPE	FUNDING TYPE		RESOURCE PLAN (Check all that apply.)	BUDGET REQUEST
☐ One-Time ☒ Recurring	☐ Categorical Specify:	☒ General Fund	☐ Facilities ☐ Marketing ☐ Technology ☐ Professional Development ☒ Staffing	$80,000

2	FUTURE PROGRAM GOAL #2 Budget Priority #2	INSTITUTIONAL GOAL(S)
Identify Goal: Offer more sections of BIOL 100 to meet demand for this class.		☐ 1 ☒ 2 ☒ 3 ☐ 4
Objective: Offer an additional 3-4 sections of BIOL 100 each semester. This will help students fulfill GE requirements, and help Nursing students get into Anatomy and Physiology courses.		
Task(s): Hire a new Biology faculty member to teach these additional courses.		
Timeline: Hope to hire faculty by 2015-2016 academic year.		

EXPENSE TYPE	FUNDING TYPE		RESOURCE PLAN (Check all that apply.)	BUDGET REQUEST
☐ One-Time ☒ Recurring	☐ Categorical Specify:	☒ General Fund	☐ Facilities ☐ Marketing ☐ Technology ☐ Professional Development ☒ Staffing	$80,000

3	FUTURE PROGRAM GOAL #3 Budget Priority #3	INSTITUTIONAL GOAL(S)
Identify Goal: Increase quality of education in life science courses through hands-on learning equipment.		☐ 1 ☐ 2 ☒ 3 ☐ 4
Objective: Purchase new lab equipment, software, models, etc.		
Task(s): Identify what resources each course requires, determine total cost of purchases. Depending on what is purchased, some maintenance agreements may be needed, otherwise, these are one-time purchases.		
Timeline: Hope to continuously purchase equipment over the next 3 academic years to fulfill this goal.		

EXPENSE TYPE	FUNDING TYPE		RESOURCE PLAN (Check all that apply.)	BUDGET REQUEST
☒ One-Time ☐ Recurring	☐ Categorical Specify:	☒ General Fund	☒ Facilities ☐ Marketing ☐ Technology ☐ Professional Development ☐ Staffing	$100,000

TOTAL BUDGET REQUEST	$260,000

1. How will your enhanced budget request improve student success?

These budget requests will improve student success by allowing students to complete life science courses quicker, and to have a more enriched educational experience while in those courses.

Comments:

III. INSTITUTIONAL STUDENT LEARNING OUTCOMES (ISLOs)

ISLO 1	COMMUNICATION SKILLS
ISLO 2	CRITICAL THINKING SKILLS
ISLO 3	PERSONAL RESPONSIBILITY
ISLO 4	INFORMATION LITERACY
ISLO 5	GLOBAL AWARENESS

IV. PROGRAM LEARNING OUTCOMES (PLOs)

PROGRAM LEARNING OUTCOMES (Describe learning outcomes.)	**ISLO(S)** [Link PLO to appropriate ISLO(s).]

PLO 1	**PROGRAM LEARNING OUTCOME #1**	**ISLO(S)**
	Identify Program Outcome: Students will demonstrate an understanding of fundamental biological concepts and knowledge of the structure and function of living organisms.	☒ ISLO 1 ☒ ISLO 2 ☐ ISLO 3 ☐ ISLO 4 ☐ ISLO 5
	Measurable Outcome Summary: This outcome was assessed through the identification of anatomical structures on a human cadaver. Over the course of two semesters (F12 and Sp13), a total of 109 students from BIOL 202 and BIOL 204 took the quiz. All groups earned 100% on the quiz.	
	☒ Met ☐ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** The results illustrate the power of experiential learning and group cooperation. As long as we have a cadaver available, cadaver observation will remain a key part of studying the human body.	

PLO 2	PROGRAM LEARNING OUTCOME #2	ISLO(S)
	Identify Program Outcome: Students will display competency with respect to the use of standard laboratory equipment and techniques commonly used in life science labs.	☐ ISLO 1 ☒ ISLO 2 ☒ ISLO 3 ☐ ISLO 4 ☐ ISLO 5
	Measurable Outcome Summary: Students in BIOL 220 were assessed for their competency with the use of a microscope and bacterial staining techniques commonly used in microbiology. Students were given an unknown bacterial culture sample, and were asked to perform a Gram stain. 67% of the students were able to perform the staining procedure and correctly identify the morphology.	
	☐ Met ☒ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** Microbiology classes will continue to incorporate various lab activities that help students improve their competency with scientific techniques and equipment.	

PLO 3	PROGRAM LEARNING OUTCOME #3	ISLO(S)
	Identify Program Outcome: Students will understand the process of scientific research and display critical thinking skills related to hypothesis development, experimentation and data interpretation.	☒ ISLO 1 ☒ ISLO 2 ☐ ISLO 3 ☐ ISLO 4 ☐ ISLO 5
	Measurable Outcome Summary: Of the 21 BIOL 220 students who participated in the lab, 100% formulated and correctly accepted/rejected their hypotheses based on their data. For the question relating to disinfectant efficiency, 17/21 (81%) of students answered it correctly.	
	☒ Met ☐ Partially Met ☐ Not Met **Provide detail on any improvements/effectiveness and detail status on those not fully met:** Students displayed critical thinking and did very well with hypothesis formation, experimental design and data interpretation. BIOL 220 and other life science courses will continue to incorporate various lab activities that focus on the scientific method and hypothesis testing.	

***** ATTACH PLO/SLO GRID *****

Course	# Credits	# SLOs Identified	Which SLO was assessed? Fall 2010	Spring 2011	Fall 2011	Spring 2012	Fall 2012	Spring 2013
BIOL090	3	3		3		1		2
BIOL100	4	4		4		1		2,3
BIOL120	4	4						1,2,3,4
BIOL122	4	4				1,2,3,4		
BIOL140	3	3		2				
BIOL150	3	3		1		3		2
BIOL180	4	4	3		2		1,4	
BIOL182	4	4		1		4		2,3
BIOL200	4	4	3	3	2	1	4	
BIOL202	4	4	2	1	4	3	1	
BIOL204	4	4	3	1	4	4	2	
BIOL206	4	4	4	2	3	1		4
BIOL220	5	5		3		5	1,4	2

Class not offered

Program	# PLOs	Which PLO was assessed? Spring 2012	Fall 2012	Spring 2013
Life Sci	4	4		1,2,3